

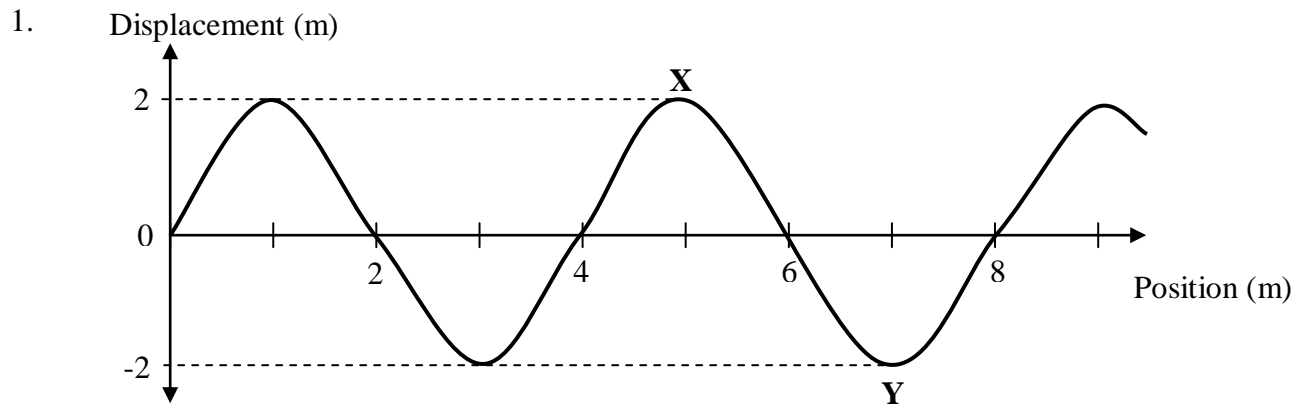
PHYSICS 2.3

Name: _____

WORKSHEET ONE

REVIEW OF YR 11 AND E.M. WAVES

Wave Basics



The shape of a wave on a string is shown above. The measurements given are in metres.

(a) What is the wavelength of the wave? _____

(b) What is the amplitude of the wave? _____

(c) Is the wave transverse or longitudinal? _____

(d) Position X is called a _____. Position Y is called a _____

(e) If the speed of the wave in the string is 1.6 ms^{-1} , calculate the frequency of the wave.

(f) Using your answer to (e), determine the period of the wave.

(g) As the wave travels to the right from this position, describe the string's motion at point X.

2. Complete the following chart.

Wavelength (m)	3	1.5	0.8			0.15	25
Frequency (Hz)	50	30		660	2K		
Speed (ms^{-1})				330	500	9	
Period (s)			0.25				5

Electromagnetic waves

3. Electromagnetic waves transfer _____ through the medium of electric and magnetic fields. They all travel at the same _____ in a vacuum which is called the speed of _____. As the frequency of an electromagnetic (e.m.) wave increases, its _____ decreases. High energy e.m. radiation has a _____ frequency.
4. Calculate
(a) the frequency of visible light that has a wavelength 7×10^{-7} m. (Given that $c = 3 \times 10^8 \text{ ms}^{-1}$)

(b) the wavelength of a radio station transmitting on 540 kHz.

5. Suggest uses for the following parts of the e.m. spectrum.
(a) X-rays. _____
(b) Radio waves _____
(c) Micro waves _____
6. State a characteristic property of the following types of e.m. radiation.
(a) Gamma rays _____
(b) Infra red _____
7. The following diagram shows the wavelength range of electromagnetic radiation. Assign the correct labels to each box where its wavelength fits best.
Labels: X-rays, Infra red, Radio waves, Visible light, Ultra violet light, Gamma rays, Microwaves

